

System Requirements RU Staying

Software Engineering

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Report 1: Part 1

By Group #11

Keya Patel

Zain Sayed

Mohammed Sapin

Purna Haque

Nga Man (Mandy) Cheng

Rameen Masood

Shilp Shah

Mathew Varghese

Thomas Tran

Eric Zhang

Github: <https://github.com/mohammedsapin/RUStaying>

Submission Date: Feb 10, 2019

	Project Manage ment	Custome r Problem Stateme nt	System Require ments	Function al Require ments Glossary	Non-fun ctional Require ments	User Interfac e Specs	App Function ality (Intende d usage)
Keya	10%	20%	10%		20%	10%	
Zain		10%	10%	10%			40%
Mohammed	30%	20%	10%				10%
Purna			10%	10%	20%	10%	20%
Nga Man	30%		10%		10%	20%	
Rameen		20%	10%	20%	10%		10%
Shilp			10%		30%	30%	
Mathew	20%		10%	10%		10%	20%
Eric		20%	10%	20%		20%	
Thomas	10%	10%	10%	30%	10%		

Section 1: Updates of Proposal

Cognizant survey link:

https://www.cognizant.com/industries-resources/travel_and_hospitality/2016-Travel-Hospitality-Study.pdf

Question 2. Defining “self service technology”

This app is designed to allow the user to access the services of a hotel at their own convenience. This is part of self service technologies because it allows customers to access services, independent from direct employee involvement. For example, the user can request Room Service directly through the app and it will be delivered to their room. Our app provides a system for the user that will make services more convenient, faster and easier to access, without having to call or talk to an employee.

Question 3. Doing research on “previous failed attempts” and similar apps

From our research, we noticed a couple apps that are similar to the one we are producing. But none of them are widely used and they all had very poor user ratings. We even downloaded one of the hotel management system apps to see why it was not popular. The app is called Alice and after testing it for a bit, we noticed it was outdated and not very user friendly. Also, there were a lot of bugs and the app crashed from time to time. After more research, we could not find any other app that is trying to accomplish what our system proposes. By using more modern tools and developing a modular system, we can create a user friendly app that is widely used and functional.

Question 4. “This also bypasses a common problem of not having readily available staff at all hours of the day or night.” Does this mean the customers needs will not need human involvement?

The purpose of our system is to provide convenient solutions to the users need. Once a user requests a service, it is handled by the respective employee if necessary. Hotel staff will still be needed throughout the day and night to complete the user request but this system provides more convenient staff management. By keeping track of the guests and previous data on which

services are used the most, the hotel manager can better predict the staff needed at different times during the day. The customers will not need human involvement to request services as it is done through the app, but hotel staff will still be needed to execute those services for the user.

Question 5. For the guest Check In, when you say “Guests can check-in for their rooms upon arrival at the hotel.”, does this mean the reception process is also eliminated? In that case how does the customer receive the keys to his/her room?

The reception process would also be eliminated because the user can check-in for their room through the app. Once the user checks-in, we will send them the room information and an electronic key directly in the app. Of course, the reception desk will still exist for guests who do not use the app, and those guests will receive a physical key to the room. The goal is to have guests check-in through the app so they do not have to wait in line at the reception.

Question 6. In Booking a room, “This will be all prepared by the hotel staff prior to the guests arrival.” counters your point made in the project description “After a long flight, people are usually tired and impatient when waiting in line to check in at the front desk of a hotel while the staff is helping other guest”

When a user books a room, they can specify any amenities they want, which includes the number of bedrooms, type of beds, and additional blankets or pillows. Since the guest will have a specific time to check-in, the hotel staff can prepare the room right before the guests arrival. The guest would not have to wait in line at the front desk because this will already be handled prior to their arrival. The purpose of this feature is to allow the guest to give specific instructions if they want additional amenities in their room, without having to tell hotel staff after their arrival.

Problem Statement

Customer:

Tommy had a flight booked for American Airlines on Thursday. He wanted to enjoy a peaceful trip to Princeton. He booked a package deal on Expedia for flight and hotel. He had planned to stay at a local Hilton hotel located in Princeton, NJ. Tommy was having a terrible time at the start of his vacation. His flight was delayed, TSA was giving him a hard time, and a baby was crying the entire flight. By the time he landed he had to wait 40 minutes for a runway to become available, another 40 minutes for his luggage to get to the carousel, and another 40 minutes for an Uber pool where he shared it with a slightly “eccentric” family.

By the time he got to the hotel, Tommy did not want to deal with another person, nor did he want to wait in line to be checked in. But to his disappointment, when he got to the hotel, the line was extremely long, held up by someone complaining at the front desk. After he finally got to the front of the line, checked in, and asked for a bell boy, he found himself again impatiently waiting for someone to come help him carry his heavy luggage up to his room. However, a bell boy was nowhere to be found, and Tommy had no choice but to wait in the lobby just for one to show up.

When he finally got to his room, all he wanted to do was rest from his terribly long day, but he could not even get into his room due to his key card malfunctioning. So he had to go back to the front desk and wait in line again for a new key. Once he finally got a new key and was able to enter his room he realized his sheets had not been changed, and the toilet wouldn't flush. He tried calling room service on the phone but the lines were busy, so again he had to go to the front

desk and report the issues. However, the front desk told him that maintenance was busy, and that Tommy would have to wait for staff to check if another room was available.

As Tommy was hungry, he figured that he would let the hotel staff figure out his room situation while he grabbed a bite to eat. He walked over to the hotel restaurant, sat down at a table and relaxed in his chair. He figured that after a meal he would be in better spirits. However, when the waiter handed him his menu, to his horror he discovered that the hotel had no vegan options. Tommy, a devout believer in veganism, found his efforts to relax again thwarted by a lack of information readily available for him, and attempted to leave the hotel to find outside dining options. But as soon as he stepped outside, he was immediately hit with a wall of torrential rainfall. Now fuming, he decided to check on the room status, and to his pleasant surprise, the hotel had been able to quickly move his belongings to a new room. Entering, he checked the toilet, sink, and bed for any signs that his new room was dysfunctional. Satisfied, he laid in his bed, ready to finally get a good night's rest after such a stressful day. However, he quickly discovered that sleeping would not be an option, as the hot and humid summer night caused a profusion of sweat to begin forming all over his body. He quickly reached for the air conditioning remote, and turned it on to its lowest setting. To his dismay, the AC began sputtering hot, foul smelling air into his room. At this point, Tommy was ready to cut his vacation short and go home. After again going to the front desk and finding a new room, Tommy finally fell into a nightmare riddled sleep full of bathroom malfunctions and dirty bed sheets. When he awoke, he felt surprisingly refreshed with a clear purpose. He gathered all of his belongings and promptly checked out of the hotel. He had decided to go back home after all. On

his way out, he asked if the hotel had any customer feedback forms he could fill out. After being told no, he happily yelled at the staff for an hour before departing for his flight home.

From Tommy's experience we can see that many issues can arise in a hotel. This could be due to poor hotel management, influx of many guests during vacation weekends, and many other things. The hotel was able to provide Tommy with solutions for each of his problems, however it was very inconvenient and took a long time. Tommy would have rather had his solutions addressed or solved at a timely manner. With our application we are trying to solve these issues and help people like Tommy have a better guest experience at hotels. Through the app Tommy can check in beforehand and receive a digital copy of his key on his phone. Before he enters the hotel he can even request for his room to have clean sheets, working appliances, etc. All of this saves Tommy time from waiting on the phone or going down to the front desk each time to solve an issue. Through the app we are enhancing the customers ability to have self service and do things on their own. Hotels will still operate the same way and guests can choose not to use the app and talk directly to the hotel staff. We are targeting a group of people that are more tech savvy and are part of the revolutionizing era of self-service technology. A typical guest through the app can request a car, report how many luggages he has, request amenities for his room, preview menus, order food, and even access the concierge. At the end of a users stay the app asks for feedback and ways to improve service.

Hotel Staff

Kenny, the hotel manager, is tired from a long, endless night of checking people into the Varghese Hotel. As he stands at the concierge desk, typing furiously away trying to check-in people waiting, he is getting more stressed. Kenny tries his best to meet every guest with a smile

and a friendly greeting, however, it becomes difficult when guests come in exhausted and irritated from their travels. Currently, it's 5 PM on a Friday night and there are 15 guests waiting impatiently to get checked-in. Kenny, thinking to himself, wishes that there was a way all of these problems could go away. If only there was an efficient way to check people in without angry customers yelling at him. As Kenny works tirelessly to make sure all customers are shown to their rooms, he realizes there are not enough bellboys for guests' luggage. The guests, realizing there is no bellboy, furiously just takes their luggage to their rooms themselves. Their stay at the hotel is not starting on a good note. As Kenny takes a quick moment to compose himself, his break is hurried with ring of the front desk phone. The complaints begin to pour in. Guests are filing maintenance requests, bedding changes, issues with the room keys, and much more. Although I have my hotel managing staff to help me, all the complaints are starting to pile up and guests are growing impatient. We are confident we will resolve all the issues, but not in a timely manner. On top of this, the technology we use at the hotel has many glitches. We try our best to keep track of room usage and just general monitoring, however our tech is outdated and slow. We need to make advancements and improve the way we manage the hotel.

App Solution (Manager/Staff)

- Manager can view assignments of digital keys for security purposes
- Bellboys will get a push notification when service is needed
- Manager can see which rooms are occupied and pull up the information of guest staying in that room, and the requests the guest may have listed
- Driving services/taxi will get notifications for scheduling appointments

- Maintenance staff will be notified for requests
- Restaurant staff will be able to see orders which have been requested

With the app (Solution):

- Put in luggage information through the app to make sure bellboy service is on time
- Digital Key to avoid problems with the physical key plus skip the LONG lines
- Put in urgent maintenance request (broken toilet, phone, AC), no need to call
- Ask for room cleaning (Dirty bed sheets) , no need to call
- Request for a another room, no need to call
- Check for restaurant hours
- Check the restaurant menu through the app and include dietary restrictions
- Eliminate wait times through check in with the app, and requests made in the app
- Feedback form
- Request a complimentary car service for pickups and drop-offs

Although Tommy was having a horrible course of events, these could have all been avoided through the use of the hotel app, RU Staying. Through the app, Tommy had the option to request a bellboy upon his arrival and even say how many luggages he will have when he does arrive. In addition, the digital key that is available through the app would have allowed Tommy to avoid any malfunctions with a physical card key. These are just a few of many features that the app will be able to provide to guest who are seeking a more enjoyable and convenient stay.

Glossary of Terms

Bellboy - A staff member who helps guests in moving their luggage to their rooms, and provides any additional assistance that may be asked of them.

Concierge - A staff member who is responsible for answer any questions guests may have pertaining to anything from hotel policy to nearby points of interest.

Maid - A staff member whose primary responsibility is to clean the guests' rooms.

Maintenance request - Process by which a guest can request assistance when dealing with a technical or mechanical issue in their room

Reservation - Process by which a guest will reserve an available room and pick out other amenities or logistics

Check-In - Process by which a guest will confirm their booking information and payment methods and be allowed to move into their hotel room to begin their stay.

Digital Room Key - A digital card that, after booking a room, the guest will receive on their phones after checking in. It will allow them access to their rooms and other guest-only areas in the hotel such as the pool or gym.

Physical Room Key - A physical card version of the digital room key- it will allow guests access to their rooms and other guest-only areas in the hotel such as the pool or gym.

Creating an account - A process by which a guest creates a username and password to become associated with the hotel, and allow their information to be quickly accessed by hotel staff.

Guest - A person who has booked a room, checked in, and is now living in the hotel within his reserved duration

Valet Parking - A process by which a bellboy or another staff member will be given a guest's keys and drive the guest's vehicle to the hotel's parking garage. The guest can also request for their car to be driven back to the front entrance if they wish to leave.

Feedback/customer satisfaction - Through a form we will gauge how much customers either enjoyed or did not enjoy living at our hotel. This can be measured by any complaints or compliments they may have, as well as any additional comments that we will read.

Luggage - Any amount of baggage that guests bring with them to keep during their stay.

Bedding - Additional room items such as bed sheets, pillows, blankets, towels, etc.

Early departure - Hotel policy that allows guests to leave before their original departure date.

Connecting room - 2 rooms in our hotel connected by a door. These types of rooms can be specially reserved by the guest.

Functional System Requirements:

REQ	Priority Weight	Description
REQ - 1	2	System will allow users to create an account and register with email and password
REQ - 2	2	System will allow users to login to their account with a unique username and password
REQ - 3	6	System will allow users to check-in for their room
REQ - 4	6	System will allow users to make reservations
REQ - 5	4	System will allow users to call room service.
REQ - 6	8	System will keep track of available / unavailable rooms
REQ - 7	5	System will allow users to make maintenance requests
REQ - 8	3	System will verify user account by checking with the database
REQ - 9	2	System will allow users to input how many bags they have in order to call the bellboy
REQ - 10	7	System will provide the user with a digital room key.
REQ - 11	1	System will provide the user with additional hotel information and FAQ.
REQ - 12	3	System will allow guests to use the car service.
REQ - 13	10	System will be able to keep track of room usage and general hotel activity
REQ - 14	1	System will ask for feedback from the guest upon checkout

REQ - 15	3	System will allow users to easily communicate with staff
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Non-Functional System Requirements

REQ	Priority Weight	Description
REQ - 16	6	The app will have a simple, responsive user interface (see details below about more specific requirements)
REQ - 17	1	The system should allow more than one user to access and use the application
REQ - 18	1	The system will use SQLite for data maintenance
REQ - 19	2	The system should provide error notifications to let the user know there is an issue

Functionality

The goal of this app is to become widely used by all the guests that stay at the hotel. Overtime, we expect a growing user base because more people will visit the hotel and revisit because of the convenience we provide through the app. To handle the growing user base, we will be storing our information using MySQL database. Since most of the data we are storing is user information and the use of the hotel services, we only needed a simple and functional tool. Data sorting and analysis tools are not needed so we decided against Postgresql. Since the app is on Android, it is already portable and usable by most devices in the world. For security, we will be protecting passwords by hashing when storing them in the database.

Usability

As mentioned, the app is being built on the Android platform so it is very accessible by many users. To have a modern app design that is aesthetic and responsive, we will be following Google's Material Design tools. This will save us a lot of time when creating the user interface because all the tools are built and we only have to implement them.

Reliability

We will be thoroughly debugging and testing our application to ensure that it does not crash at any point during use. Throughout our multiple builds, we will be continually updating our application to fix any issues that arise in runtime. This will help cut down on the possibility of failure if and when an actual customer is using it. Additionally, we will be backing up all the data saved onto a separate database table to ensure data is not lost or corrupt. We will also be making sure that customers will not have access to the managerial aspect of the app and vice versa to prevent any security risks or issues.

Performance

For the purposes of this app, we will not be managing a very large set of data, so the performance that MySQL provides is acceptable. The app is more focused on functionality and Android Studio is a reliable application that allows us to scale the app easily.

Sustainability

When implementing the requirements of the app, we will heavily use the features of OOP to maintain modularity and scalability. Also, we will use the Android Studio debugging tools to ensure an error-free experience for the user. Of course, errors can still occur so we will provide notifications in the app of the errors that occur. This way, while testing the app, we can see the type of errors and where they occur to try to fix them.

On-Screen Appearance Requirements

The on-screen requirements are specific to the user interface and were designed to provide a simple and convenient experience. We will be splitting up the user interface in two main parts, the first part is a page that provides the necessary information and the second part is a navigation bar that is consistent across all pages. This is a common modern design for many applications as it is simple and allows the user to navigate the app easily.

REQ -	Priority Weight	Description
REQ - 20	1	The app will have a navigation bar across the bottom to switch easily between the main features (ex: Home, Check-in, Guest Services, User Profile etc...).
REQ - 21	1	The Home button on the navigation bar will lead to a page where the user can explore more about the hotel, nearby points of interests, and FAQ.
REQ - 22	1	The User Profile tab will provide the users personal information and details about their hotel stay.
REQ - 23	1	Another tab will allow the user to Check-In or Make a Reservation. Upon clicking on these, it will lead to another page where the user can actually perform the action.
REQ - 24	1	We have a lot of services that the user can request so we will have one tab that lists all the services and from there the user can select one (see UI diagrams below).
REQ - 25	3	Within the Request Hotel Service tab, some of the services listed are: Concierge, Room Service, Car Service, Call Bell Boy, Room Maintenance, and the Feedback Form. This is the main tab where the user can access all the services.

App User Interface Templates

Home Page



Welcome Back, (Name)		
	Book a room	
	Check in	
	Inbox	
	My Key Card	

Account Page



Name's Account		
Name		
Current Room Number		
Phone		
Email		
Payment Method		
Edit Information		

Guest Services



Guest Services		
Concierge	Room Service	
Cleaning	Maintenance Request	
Car Services	FAQ	

Maintenance Request Page (from Guest Services)

<	Maintenance Request	
New In Progress Completed		
File a new request:		
Name		
Room Number		
Please provide a brief description of the problem, and when the room will be available...		

Login Page


RUSTAYING


Login


Username

Password

Or create a new account







Project Management

Below is a detailed breakdown of the various parts of the project and how the work is split up. We defined the subgroups and which parts each team is going to develop. This breakdown is a good estimate of the work but it is subject to change as we progress into development.

Subgroups based on feature modules:

Features	Subgroup
Check In Module (Guest UI focused)	Zain, Mohammed, Rameen
Guest Services Module (Guest UI focused)	Purna, Mandy, Shilp
Additional Amenities/Administrative Services Module (Admin UI Focused)	Mathew, Eric, Thomas, Keya

Specific Requirements

User Login and Account Creation

- Rameen will develop the main interface to allow guests and admins to create accounts and login with their email and password. **REQ-1 & REQ-2.**

Reservation Management

- Zain and Mohammed will develop the infrastructure required for users to make reservations and check in to their room upon arrival at the hotel. **REQ-3 & REQ-4**

Guest Services

- Purna will develop the room service and car service features. This will be implemented within the UI and gives the user an estimate of how long the service will take to complete based on hotel staff available. **REQ-4 & REQ-12**
- Mandy will develop the digit room key feature and the bellboy service. For the room key feature, there will be a simple security aspect so that guests can only access their rooms. **REQ-9 & REQ-10**
- Shilp will develop the maintenance request and feedback features. Both of these features will prompt the guest to enter specific information which is sent back to the administrative side of the app for review. **REQ-7 & REQ-14**
- Additionally, our subgroup together will implement a simple feature to communicate with hotel staff directly. **REQ-15**

Additional Amenities/Administrative Services Module

- Mathew will implement the feature to keep track of available and unavailable rooms in the hotel, based on current guests and future reservations made. **REQ-6**
- Eric will implement a simple security system for storing passwords and account information safely. Also develop a simple feature in the UI that lists additional hotel information and frequently asked questions. **REQ-3 & REQ-11**
- Thomas and Keya will keep track of all other hotel services usage. This includes keeping track of how often each of the services is used and the peak times where more staff is needed. This is a difficult task because it involves data tracking and analysis. **REQ-13**